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Artículos Científicos

Nivel de satisfacción académica en estudiantes de Paramédico y Protección Civil de la Universidad Tecnológica del Valle de Toluca

Level of Academic Satisfaction in Paramedic and Civil Protection Students of the Universidad Tecnológica del Valle de Toluca

Nível de satisfação acadêmica de estudantes de Paramédico e Proteção Civil da Universidade Tecnológica de Valle de Toluca

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Resumen

La satisfacción académica es un indicador de calidad. Para la Universidad Tecnológica del Valle de Toluca implica una mayor motivación, sentimiento de pertinencia, permanencia y una menor deserción. Por lo que el objetivo de este trabajo fue indagar el nivel de satisfacción académica en los estudiantes tanto de Técnico Superior Universitario en Paramédico Escolarizado (TSUPE) como despresurizada (TSUPD) y de la Licenciatura en Protección Civil y Emergencia (LPCE) de dicha institución educativa.

Para ello se adaptó y aplicó el instrumento para evaluar la satisfacción del estudiante diseñado por Álvarez, Chaparro y Reyes (2015) a 320 alumnos, clasificados por grado académico. Asimismo, se realizó un análisis de varianza, una correlación de Pearson y un análisis de componentes principales ($p < 0.05$).

Los resultados indican que los alumnos de TSUPE, TSUPD y LPCE se encuentran satisfechos con la calidad académica. Y que la atención por parte del docente es el principal factor. Por último, un aspecto de mejora son los servicios de apoyo.

Palabras clave: atención prehospitalaria, educación universitaria, Licenciatura en Protección Civil, Técnico Superior Universitario en Paramédico, satisfacción académica.

Abstract

Academic satisfaction is an indicator of quality. For the Universidad Tecnológica del Valle de Toluca it implies a higher motivation, feeling of relevance, permanence and a lower dropout. Therefore, the aim of this work was to investigate the level of academic satisfaction in students of both Higher University Technician in School Paramedics (TSUPE) and depressurized (TSUPD) and Bachelor's in Civil Protection and Emergency (LPCE) of said educational institution.

To reach the above mentioned the instrument to evaluate student satisfaction designed by Álvarez, Chaparro and Reyes (2015) was adapted and applied to 320 students, classified by academic degree. Likewise, a variance analysis, a Pearson correlation, and a principal component analysis ($p < 0.05$) were performed.

The results indicate that TSUPE, TSUPD and LPCE students are satisfied with academic quality, with the teacher's attention being the main factor. One aspect of improvement is support services.

Keywords: prehospital care, university education, Degree in Civil Protection, Advanced University Technician in Paramedic, academic satisfaction.

Resumo

A satisfação acadêmica é um indicador de qualidade. Para a Universidade Tecnológica do Vale do Toluca, isso implica em maior motivação, sentimento de relevância, permanência e menor abandono. Portanto, o objetivo deste trabalho foi investigar o nível de satisfação acadêmica dos estudantes de ambos os Técnicos Universitários em Paramédicos Escolares (TSUPE) e despressurizados (TSUPD) e o Grau de Proteção Civil e de Emergência (LPCE) da referida instituição educacional.

Revista Iberoamericana para la Investigación y el Desarrollo Educativo
ISSN 2007 - 7467

Para tanto, o instrumento foi adaptado e aplicado para avaliar a satisfação do aluno de Álvarez, Chaparro e Reyes (2015) a 320 alunos, classificados por grau acadêmico. Da mesma forma, foram realizadas análises de variância, correlação de Pearson e análise dos principais componentes ($p < 0,05$).

Os resultados indicam que os alunos do TSUPE, TSUPD e LPCE estão satisfeitos com a qualidade acadêmica. E que a atenção do professor é o principal fator. Finalmente, um aspecto da melhoria são os serviços de suporte.

Palavras-chave: atendimento pré-hospitalar, educação universitária, Bacharel em Proteção Civil, Técnico Universitário de Paramédicos, satisfação acadêmica.

Fecha Recepción: Abril 2019 **Fecha Aceptación:** Octubre 2019

Introduction

Education in prehospital care has evolved: from informal to university training (Chang, Tsai and Williams, 2017; Devenish, 2014; Hou, Rego and Service, 2013). Currently, in Mexico the certification of degree or professionalization (professional title and certificate) is used. In this regard, the Technological University of the Toluca Valley (UTVT) has the degrees of University Technician in Paramedics (TSUP) in school mode (TSUPE) and depressurized[1] (TSUPD), with its continuity in the Bachelor of Civil Protection and Emergencies (LPCE).

However, as in other medical disciplines, university programs for prehospital care are a mixture of practical and scientific education, so there are several factors that can influence the learning and satisfaction process (Hou et al., 2013; Osorio and Parra, 2016).

Student satisfaction with the training received is defined as the state of mind that students have regarding their institution. It is the result of the perception of compliance with their needs, expectations and requirements (Agustín and Domelis, 2009). It also confirms the educational quality and reflects the efficiency of academic and administrative services; what implies a greater motivation, feeling of belonging, permanence and a positive diffusion of the academic activity (González, Pino and Penado, 2017; Oliva and

[1] La modalidad despresurizada es un sistema para aquellas personas que desean continuar con sus estudios universitarios y que por motivos de trabajo, diversidad de horarios en sus actividades personales u otras razones no pueden integrarse a un horario escolar en días hábiles.

Gómez, 2014; Pérez and Pereyra, 2015; Silva, Domínguez, Cortés, Castorena and Polo , 2015).

The reason for measuring it is based on the fact that students are the nuclear hub and the guarantee of the existence and maintenance of educational organizations. They, as recipients of education, are the ones who can best value it and, although they present a partial and subjective vision, their opinion provides a reference that must be taken into account. Measuring student satisfaction makes sense whenever it is accompanied by actions that promote improvement and innovation; That is why measuring this construct in a consistent, permanent and adequate manner would guide the correct decision making, with the intention of taking advantage of the opportunities for improvement (González *et al.,* 2017).

Satisfaction is crucial to assess a service, to the point of making a difference in the market. In the case of education, it can influence the student's desire to attend college or to drop out, so it is presented as the best strategy to avoid dropping out; It is influenced by trust, so that it can be created through equal treatment with students, fulfilling their expectations and handling complaints effectively (Alonso Dos Santos, 2016).

For this reason, it is important that students express their opinion about the learning units, the interactions they have with their teacher, classmates and administrative staff, and the facilities, equipment and services provided by the institution (Silva et al ., 2015). This study aims to investigate through the survey proposed by Álvarez, Chaparro and Reyes (2015) the level of academic satisfaction in the students of the TSUPE, TSUPD and LPCE careers of the UTVT.

Method

This is a cross-sectional, descriptive and correlational study, conducted on students of TSUPE, TSUPD and LPCE, belonging to the Civil Protection Career Directorate of the UTVT, located in the town of Santa María Atarasquillo, in the municipality of Lerma, State from Mexico.

For the selection of the evaluation instrument, a literature review was carried out. From this, the one proposed by Álvarez et al. Was selected and adapted. (2015), which measures, using a Likert-type scale of five values (1 = Totally dissatisfied, 2 = Dissatisfied,

3 = Satisfied, 4 = Very satisfied, 5 = Totally satisfied), eight indicators that intervene in student satisfaction : Curriculum (PE), Training and ability for teaching teachers (CHED), Teaching and evaluation methods (MEE), Student self-realization level (NAE), Support services (SA), Administrative services (SA), Enabling environment (AP) and Infrastructure (I).

The data collection was carried out during the months of March and April 2018. It was obtained with the help of the Google Forms tool. And a simple random sampling was used. The inclusion criteria are set out below: indistinct gender, enrolled in some of the aforementioned careers and agreeing to participate in the study.

The collected data were exported to a Microsoft Excel program worksheet, for later statistical analysis with the Sigma Plot version 13.0 program and the statistical complement for Excel Real Statistics. Quantitative variables were represented with measures of central tendency (mean and median) and dispersion (standard deviation [SD]) and qualitative measures in percentages and absolute frequencies. The reliability analysis was performed with the determination of Cronbach's alpha coefficient, whose acceptable values are greater than 0.7 and of excellence, above 0.9.

Likewise, for the statistical analysis of the data obtained, these were classified by gender and grade level (LPCE, TSUPE and TSUPD). The chi-squared test was used to check if the scores on the satisfaction indicators were different according to the aforementioned classification. Subsequently, the comparison of two or more means was performed using the analysis of single-factor variance (Anova) (post-hoc Kruskal Wallis tests; Dunn method if significant) and a Student t for independent samples, considering the statistical significance with a value of $p < 0.05$.

The group that presented statistical significance with $p < 0.05$ (Anova and Student's t) was the school grade. The general average obtained of 3.5 was used as a cut-off point to establish if the students are satisfied (greater) or dissatisfied (lower).

Through Pearson's correlation coefficient, meanwhile, the correlation between satisfaction factors was analyzed, considering very strong correlations greater than 0.8, strong between 0.6 and 0.8, moderate from 0.4 to 0.6, weak between 0.2 and 0.4 and less than 0.2 as very weak and a $p < 0.05$.

Finally, a principal component analysis (ACP) was performed. Before its execution it was verified by the Kaiser-Mayer-Olkin (KMO) test, whose value must be greater than

0.5. ACP is a multivariate technique that allows examining the relationship between various quantitative variables and can be used to reduce the number of variables. Linear combinations are orthogonal and together explain the variability of the data; The first component is the one that explains most of it.

Results

Student Characteristics

Of the 412 students who made up the registration of the Directorate of Civil Protection and Emergencies of the UTVT during the four-month period January-April 2018, only 320 answered the survey, which corresponds to 78% of the students. In a broken down manner, 61.25% (196) are TSUPE: 50.31% (161) are men, with an average age of 22.71 ± 5.74 years. This genus also obtained the highest percentage in the case of TSUPD, with 75% (36) and 31.94 ± 6.1, respectively (table 1).

In addition, 50.94% (163) of all students are dedicated to study. On the other hand, 24.69% (79) work in the prehospital area. This is the group with the highest percentage among those in the depressurized mode (TSUPD), with 93.75% (45) (see table 1).

Tabla 1. Características de los estudiantes de TSUPE, TSUPD, y su continuidad con la LPCE en porcentajes

	LPCYE	TSUPE	TSUPD	Total

Variable	n/ media	%/ DE	n/ media	%/ DE	n/ media	%/ DE	n/ media	%/ DE
n (%)	76	23.75	196	61.25	48	15	320	100
Hombres	32	42.11	93	47.45	36	75	161	50.31
Edad (media ± DE)	22.79	2.85	20.44	3.98	31.94	6.1	22.71	5.74
Trabajan								
No (solo estudian)	39	51.32	123	62.76	1	2.08	163	50.94
Área afín o prehospitalaria	22	28.95	12	6.12	45	93.75	79	24.69
Otro	15	19.74	61	31.12	2	4.17	78	24.38

*Edad expresada en media y DE

Fuente: Elaboración propia

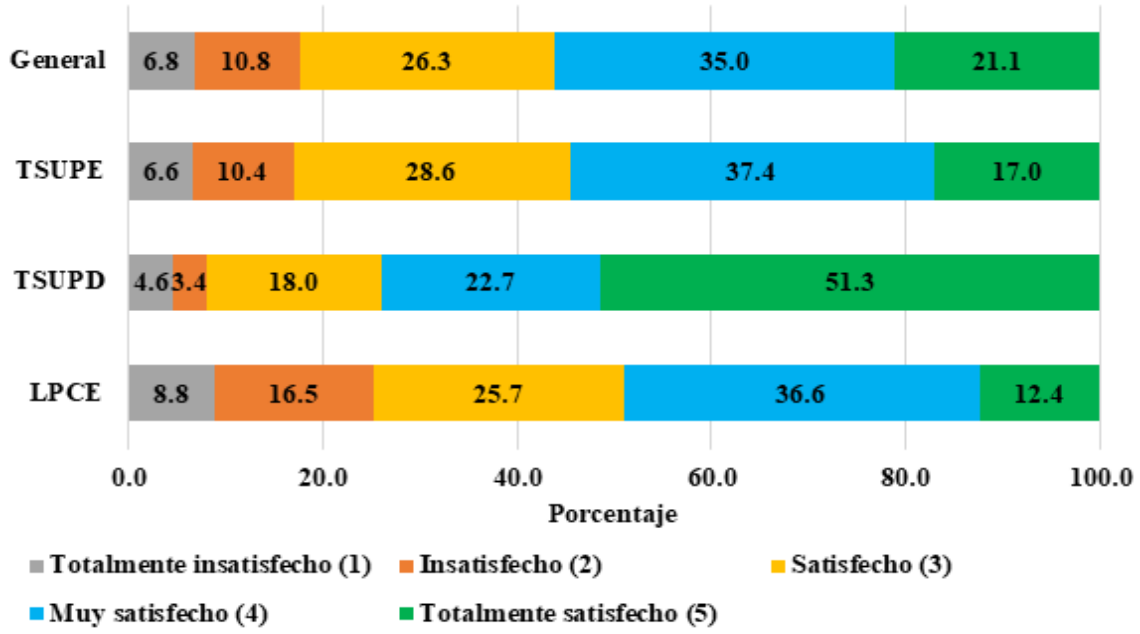
Academic satisfaction of the students of TSUPE, TSUPD and LPCE

The reliability of the university academic satisfaction assessment instrument was excellent with 0.96, determined by Cronbach's alpha coefficient.

Figure 1 shows the satisfaction percentages according to the Likert scale. In general, it is observed that 35.0% and 26.3% are among the answers of very satisfied and satisfied, same phenomenon that is repeated in the students of LPCE (36.6% and 25.7%) and TSUPE (37.4% and 28.6%). While for TSUPD, it is between totally satisfied (51.4%) and very satisfied (22.7%). It is noteworthy that LPCE students have the highest percentage of totally dissatisfied (8.8%).

Figura. 1. Porcentajes de satisfacción de acuerdo con las respuestas de los estudiantes encuestados

Revista Iberoamericana para la Investigación y el Desarrollo Educativo
ISSN 2007 - 7467



Fuente: Elaboración propia

Subsequently, the general average and the percentage of academic quality satisfaction of the students of the TSUP and LPCE careers were calculated (see table 2, where the average is on the left; on the right, the satisfaction percentage), and 3.53 ± 0.74 of 5 points was obtained (figure 1). So students are satisfied with the education received. This value was used as a cut-off point to classify the level of satisfaction, considering those that are above 3.5 as satisfied, which corresponds to 53.13% (170).

The highest score was observed in the students of TSUPD, with 4.16 ± 0.84 ($p < 0.001$), and a percentage of satisfaction of 81.25% (39), which indicates that these students are very satisfied. However, those with lower satisfaction, with 3.29 ± 0.92 and 57.89% (44), are those of LPCE. In relation to gender, men have an average 3.60 ± 0.76 and a satisfaction percentage of 58.39%.

Tabla 2. Grado de satisfacción de la calidad educativa de la carrera de TSUPD y LPCE

Variable	General	< 3.5	> 3.5

	N	Media	DE	P	N	%	N	%	p [χ]
Todos	320	3.53	0.74	-	150	46.88	170	53.12	-
				Grado					
LPCE	76	3.29	0.92		44	57.89	32	42.11	
TSUPE	196	3.46	0.85		97	49.49	99	50.51	0.22
TSUPD	48	4.16[a]	0.84	<0.001[*]	9	18.75	39	81.25	
				Género					
Hombre	161	3.6	0.76	0.096 [ϕ]	67	41.61	94	58.39	0.20
Mujer	159	3.45	0.71		83	52.2	76	47.8	

A la izquierda se muestran los promedios generales por grupo $p < 0.05$ (Anova, prueba Kruskal Wallis, método de Dunn [*], t de Student para muestras independientes [ϕ]). A la derecha, los porcentajes de satisfacción por grupo $p < 0.05$ (ji al cuadrado [χ] a grupo que mostró diferencia significativa)

Fuente: Elaboración propia

In table 3 it is observed in a general way that schoolchildren were satisfied with the indicators of Training and ability to teach teachers (3.8 ± 0.86), and its components: Promote the integration of teams (3.98 ± 0.98) and Teachers have the ability to communicate (3.62 ± 1.01). Followed by the student's level of self-realization (3.64 ± 0.83), with the factors: Values are encouraged during your teaching process (3.74 ± 0.99) and Your grades consider them (3.56 ± 0.96). And finally, that of Teaching and evaluation methods (3.62 ± 0.95), with the elements: During the teaching process the new technologies (3.70 ± 1.02) and the evaluation system (3.50 ± 1.09) are incorporated. While the areas of opportunity are the indicators Administrative services (3.41 ± 1.07) and Support services (3.04 ± 0.95). The latter was the indicator with the lowest score in all groups.

Tabla 3. Promedio del grado de satisfacción de la calidad educativa de los estudiantes de TSUPE y TSUPD, y su continuidad con la LPCE

INDICADOR/COMPONENTE	LPCE	TSUPD	TSUPE	General
		PLAN DE ESTUDIO		

Revista Iberoamericana para la Investigación y el Desarrollo Educativo
ISSN 2007 - 7467

INDICADOR/COMPONENTE	LPCE	TSUPD	TSUPE	General
El plan de estudios es pertinente (necesario, fundamental y relevante)	3.22 ± 1.01	***4.31 ± 0.85***	***3.40 ± 1.03***	3.50 ± 1.06
Satisfacción del contenido de las asignaturas	**3.21 ± 0.98**	4.31 ± 0.80	**3.30 ± 0.95**	**3.43 ± 1.01**
En cuanto a la relevancia de la información y posibilidad de su aplicación	***3.59 ± 0.93***	**4.27 ± 0.94**	3.39 ± 0.88	***3.57 ± 0.95***
Promedio	3.34 ± 0.87	4.30 ± 0.78§	3.37 ± 0.85	3.50 ± 0.91
CAPACITACIÓN Y HABILIDAD PARA LA ENSEÑANZA DE LOS DOCENTES				
Tienen capacidad de comunicación	**3.24 ± 1.00**	4.40 ± 0.92	**3.58 ± 0.94**	**3.62 ± 1.01**
Conocen y dominan los temas	3.30 ± 0.98	**4.38 ± 0.87**	3.78 ± 0.96	3.75 ± 1.00
Orientan y apoyan al estudiante	3.28 ± 1.07	4.42 ± 0.96	3.77 ± 1.01	3.75 ± 1.07
El nivel de exigencia de los docentes	3.39 ± 1.05	4.48 ± 0.95	3.80 ± 1.01	3.81 ± 1.06
Promueven la participación del estudiante	3.41 ± 1.02	4.46 ± 0.87	3.81 ± 1.05	3.81 ± 1.06
Se capacitan y actualizan	3.36 ± 1.04	4.50 ± 0.68	3.84 ± 0.98	3.82 ±1.02
La responsabilidad del docente	3.43 ± 1.05	***4.56 ± 0.82***	3.89 ± 0.92	3.88 ± 1.00
Promueven la integración de equipos	***3.62 ± 0.98***	4.48 ± 0.80	***4.00 ± 0.97***	***3.98 ± 0.98***
Promedio	3.38 ± 0.84	4.46 ± 0.75§	3.81 ± 0.78	3.8 ± 0.86
MÉTODOS DE ENSEÑANZA Y EVALUACIÓN				
Los métodos de enseñanza aplicados	**3.25 ± 1.01**	4.31 ± 0.80	3.63 ± 0.90	3.64 ± 0.97
Durante el proceso de enseñanza se incorporan las nuevas tecnologías	***3.42 ± 1.10***	***4.40 ± 0.84***	***3.64 ± 0.96***	***3.70 ± 1.02***
El sistema de evaluación	3.28 ± 1.07	**4.27 ± 0.96**	**3.40 ± 1.05**	**3.50 ± 1.09**
Promedio	3.32 ± 0.95	4.33 ± 0.77§	3.56 ±0.84	3.62 ± 0.95
NIVEL DE AUTORREALIZACIÓN DEL ESTUDIANTE				
Tus calificaciones las consideras	***3.51 ± 0.81***	***4.52 ± 0.71***	**3.34 ± 0.93**	**3.56 ± 0.96**
Los conocimientos y habilidades adquiridas durante tu proceso de enseñanza	3.46 ± 0.97	**4.29 ± 0.85**	3.51 ± 0.84	3.62 ± 0.92
Capacitación para la inserción al mundo laboral	3.49 ± 0.86	4.46 ± 0.77	3.53 ± 0.78	3.66 ± 0.86
Se fomentan los valores durante tu proceso de enseñanza	**3.41 ± 1.05**	4.48 ± 0.80	***3.69 ± 0.93***	***3.74 ± 0.99***
Promedio	3.47 ± 0.80	4.44 ± 0.71§	3.52 ± 0.75	3.64 ± 0.83
SERVICIOS DE APOYO				
Consideras que el servicio de la biblioteca	**3.39 ± 1.29**	4.13 ± 1.08	3.44 ± 1.23	3.53 ± 1.25
El acceso a sala de cómputo	2.87 ± 1.30	***4.21 ± 1.05***	***3.63 ± 1.16***	***3.54 ± 1.25***
El acceso a internet	**2.18 ± 1.31**	**2.52 ± 1.47**	**2.41 ± 1.30**	**2.38 ± 1.33**
El servicio de fotocopiado	2.38 ± 1.28	2.83 ± 1.42	2.56 ± 1.25	2.56 ± 1.28
El servicio médico	2.71 ± 1.25	3.23 ± 1.43	2.81 ± 1.30	2.85 ± 1.32
El acceso a actividades culturales, artísticas y recreativas	3.17 ± 1.18	3.56 ± 1.34	3.34 ±1.19	3.33 ± 1.21

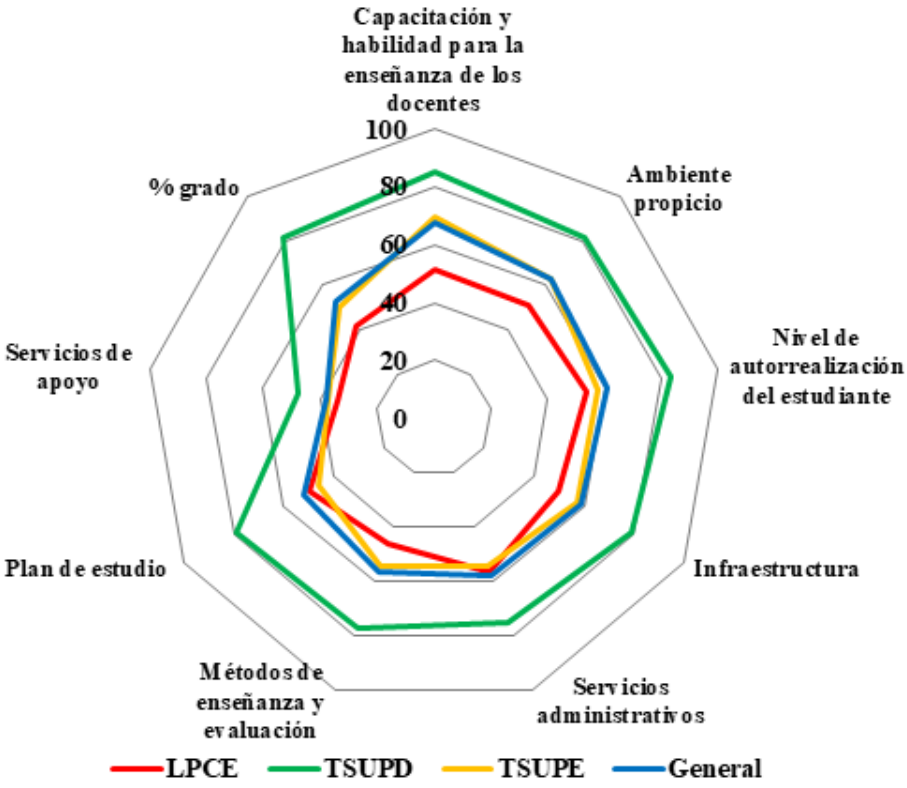
INDICADOR/COMPONENTE	LPCE	TSUPD	TSUPE	General
Cafetería	2.89 ± 1.01	3.48 ± 1.03	3.11 ± 0.94	3.11 ±0.99
Promedio	2.80 ± 0.93 $^{\phi}$	3.42 ± 1.01	3.04 ± 0.91	3.04 ± 0.95
SERVICIOS ADMINISTRATIVOS				
El servicio de control escolar	**3.04 ± 1.25**	**3.90 ± 1.22**	**3.15 ± 1.12**	**3.23 ± 1.20**
El proceso de admisión e inscripción	***3.53 ± 1.21***	***4.10 ± 1.22***	***3.48 ± 1.07***	***3.58 ± 1.15***
Promedio	3.28 ± 1.11	4.00 ± 1.12 §	3.31 ± 0.99	3.41 ±1.07
AMBIENTE PROPICIO				
La atención por parte del personal administrativo	**3.04 ± 1.29**	**3.88 ± 1.16**	**3.36 ± 1.11**	**3.36 ± 1.19**
La atención del personal de servicios de apoyo y mantenimiento	***3.43 ± 1.19***	3.94 ± 1.16	3.65 ± 1.00	3.64 ± 1.08
La atención por parte del personal docente	3.38 ± 1.13	4.44 ± 0.74	***3.70 ± 1.06***	***3.73 ± 1.08***
El ambiente estudiantil	3.41 ± 1.09	***4.46 ± 0.87***	3.52 ± 1.10	3.63 ± 1.12
Promedio	3.32 ± 0.93	4.18 ± 0.72 §	3.56 ± 0.88	3.59 ± 0.90
INFRAESTRUCTURA				
Limpieza de las instalaciones	3.47 ± 1.19	**3.83 ± 1.23**	***3.78 ± 1.12***	3.71 ± 1.16
Condiciones del mobiliario	3.33 ± 1.12	4.08 ± 1.18	3.56 ± 1.00	3.58 ± 1.08
Espacios para la enseñanza (salones, talleres, laboratorios)	***3.58 ± 1.10***	***4.38 ± 0.89***	3.70 ± 0.97	***3.77 ± 1.02***
Espacios para el descanso y recreación	**3.18 ± 1.26**	4.23 ± 1.10	3.42 ± 1.09	3.49 ± 1.18
Instalaciones de la biblioteca	3.51 ± 1.17	4.17 ± 1.23	3.54 ± 1.10	3.63 ± 1.16
Instalaciones del área de cómputo	3.22 ± 1.15	4.33 ± 0.97	3.56 ± 1.08	3.60 ± 1.13
Instalaciones de la cafetería escolar	3.47 ± 1.18	4.21 ± 0.97	**3.35 ± 1.13**	3.51 ± 1.16
Instalaciones deportivas	3.46 ± 1.05	4.00 ± 1.11	3.44 ± 1.12	3.53 ± 1.12
Instalaciones sanitarias	3.41 ± 1.11	3.90 ± 1.12	3.38 ± 1.05	**3.46 ± 1.09**
Promedio	3.40 ± 0.91	4.13 ± 0.84 §	3.52 ± 0.83	3.59 ± 0.88
PROMEDIO GENERAL				
	3.27 ± 0.74	4.13 ± 0.64 §	3.48 ± 0.69	3.53 ± 0.74

Negritas: puntuación más alta; negritas cursivas: puntuación baja. Los datos se expresan en media, DE. § $p < 0.001$; $^{\phi}$ $p < 0.02$ (Kruskal-Wallis, Anova, Método de Dunn).

Fuente: Elaboración propia

Figure 2 shows the percentage of satisfaction (> 3.5) of each of the indicators. In general, 53.13% (170) is satisfied, with 67.81% (217) in the field The training and skill for teaching teachers, followed by the enabling environment and the level of self-realization with 62.81% (201) and 60.6 2% (194) respectively. The lowest percentage was found in Support Services, with 38.12% (122). TSUPD students presented a satisfaction of 81.25% (39), with a range of 85.41% (41) to 47.91% (23), while those of LPCE expressed 42% (32), and a range of 56.58% (43) to 34.21% (26).

Figura. 2. Porcentaje de satisfacción de la calidad educativa de los estudiantes encuestados (< 3.5)



Fuente: Elaboración propia

Pearson correlation analysis

For the construction of table 4, only the correlations ≥ 0.8 (<0.001) were considered. Training for insertion into the world of work and The knowledge and skills acquired during the teaching process, both of the indicator Level of self-realization, correlated very strongly in all groups (≥ 0.8). In the indicator Training and ability to teach, Teachers promote student participation and Teachers guide and support the student, both in the case of undergraduate and depressurized students, have a value greater than 0.8. The TSUPD group presented the highest number of correlations, some with values above 0.9.

Tabla 4. Resumen de la correlación de Pearson de los diferentes indicadores de la calidad educativa de los estudiantes de TSUPE y despresurizada (TSUPD), y LPCE

INDICADOR		COMPONENTE	LPCE	TSUPE	TSUPD	General
Plan de estudio	Tu grado de satisfacción en cuanto al contenido de las asignaturas	Consideras que el plan de estudios es pertinente (necesario, fundamental y relevante)	0.727	0.647	*0.847*	0.7
Capacitación y habilidad para la enseñanza de los docentes	Los docentes conocen y dominan los temas	Los docentes se capacitan y actualizan	*0.807*	0.758	0.718	0.791
		Los docentes tienen capacidad de comunicación	0.752	0.644	*0.854*	0.73
	Los docentes promueven la participación del estudiante	La responsabilidad del docente	0.777	0.663	*0.817*	0.738
		Los docentes orientan y apoyan al estudiante	*0.801*	0.649	*0.905*	0.744
		Los docentes promueven la integración de equipos	0.69	0.716	*0.928*	0.753
	Los docentes orientan y apoyan al estudiante	La responsabilidad del docente	0.761	0.636	*0.906*	0.736
		La atención por parte del personal docente	*0.807*	0.558	0.752	0.675
Nivel de autorrealización del estudiante	Capacitación para la inserción al mundo laboral	Los conocimientos y habilidades adquiridas durante tu proceso de enseñanza	*0.848*	*0.856*	*0.864*	*0.869*
		Se fomentan los valores durante tu proceso de enseñanza	0.771	0.788	*0.915*	*0.817*
Ambiente propicio	La atención por parte del personal administrativo	El proceso de admisión e inscripción	0.689	0.698	*0.878*	0.727

Solo se muestran aquellos con un valor ≥ 0.8 ($p < 0.001$). En cursiva las puntuaciones más altas

Fuente: Elaboración propia

Principal Component Analysis

The measurement of the KMO sample adequacy was 0.95, so the main component analysis was carried out: five to eight components were obtained that explain a range of 66% to 81% of the variance. Table 5 shows the five items, with a higher score in the first component. The TSUPD group was the one that showed items scored with 0.874 and 0.8; They are the only ones that consider the relevant curriculum (0.849). He emphasizes that students in all groups consider the Attention factor by the teacher as important in educational quality, scored between 0.858 and 0.811 (bold). Followed by Values are encouraged during your teaching (italics) and Teachers promote student participation (italics).

Tabla 5. Los primeros cinco ítems del primer componente del grado de satisfacción de la calidad académica de los estudiantes de TSUPE y TSUPD, y LPCE

C.	LPCE	TSUPE	TSUPD	General
No. de C.	8	7	7	5
% 1er C.	45.71	44.65	43.95	47.34
Primer componente	**La atención por parte del personal docente (0.851, AP)**	**La atención por parte del personal docente (0.811, AP)**	Los docentes promueven la integración de equipos (0.874, CHED)	**La atención por parte del personal docente (0.836, AP)**
	La responsabilidad del docente (0.825, CHED)	Las Instalaciones del área de cómputo (0.754, I)	**La atención por parte del personal docente (0.858, AP)**	*Se fomentan los valores durante tu proceso de enseñanza (0.784, NAE)*
	Los docentes orientan y apoyan al estudiante (0.799, CHED)	*Se fomentan los valores durante tu proceso de enseñanza (0.75, NAE)*	Consideras que el plan de estudios es pertinente (0.849, PE)	Capacitación para la inserción al mundo laboral (0.783, NAE)
	Los docentes promueven la participación del estudiante (0.784, CHED)	Capacitación para la inserción al mundo laboral (0.748, NAE)	*Se fomentan los valores durante tu proceso de enseñanza (0.836, NAE)*	La responsabilidad del docente (0.78, CHED)
	Instalaciones de la biblioteca (0.776, I)	Durante el proceso de enseñanza se incorporan las nuevas tecnologías (0.733, MEE)	*Los docentes promueven la participación del estudiante (0.835, CHED)*	*Los docentes promueven la participación del estudiante (0.77, CHED)*

En negritas el ítem que se repite en todos los grupos; en cursiva, el que se encuentra en tres. (C: Componente; PE: Plan de estudio; CHED: Capacitación y habilidad para la enseñanza de los docentes; MEE: Métodos de enseñanza y evaluación; NAE: Nivel de autorrealización del estudiante; AP: Ambiente propicio; I: Infraestructura)

Fuente: Elaboración propia

Discussion

Professionalization in the area of health is not new. Starting with medicine, it was established for centuries. In recent decades, this trend has accelerated and the current expectation is that all participants in this area acquire a university education, as has happened with physiotherapy (70s) and nursing (80s). The first attempts at prehospital care training programs in Latin America began in 1979, although without much success (Devenish, 2014; Kennedy, Kenny and O'Meara, 2015).

The legislation of prehospital medical care in Mexico began in 1987, after the earthquake of 85 (as well as the National Civil Protection System), with Technical Standard 358 for the Provision of Health Care Services of Land Units of Emergency and Intensive Care. To which several rules have followed: NOM 020-SSA-1994 for the Provision of Health Care Services in Mobile Units Ambulance Type (2000); subsequently, NOM-237-SSA1-2004 Regulation of Health Services, Prehospital Emergency Care (2006), until its last modification, in 2012, with NOM-034-SSA3-2013 Regulation of Health Services, Care Prehospital Medical. In 2007, in article 79 of the General Health Law, the figure of the technician in prehospital medical care emerges, which is reformed in 2015, when he begins to demand a diploma endorsed by a competent educational institution (Ministry of Health / Technical Secretariat of the National Council for Accident Prevention [STCONAPRA], 2017).

The prehospital care staff, within the emergency medical care sector, aims to reduce the incidence of short-term disability and improve the quality of life by significantly reducing the consequences and morbidity and mortality, so paramedics are responsible for evaluation, treatment and safe transport of patients to the hospital (Devenish, 2014; Kennedy *et al.*, 2015).

For this purpose, the UTVT has been offering the TSUP for 10 years and its continuation with the LPCE (2012). This institution belongs to the Subsystem of Technological Universities, with category 5B, and also has short-term educational programs (two years, six four-month periods in the Higher Technical University option), based on competencies with 70% practice and 30% in theory, in order to provide the student with a rapid insertion into the labor market (Rama, Claudio., 2015; Ruiz Larraguivel, 2014). One of the limitations of this study was the lack of participation by students (22%); Only 78% of the enrollment participated, distributed by academic level. The highest percentage is observed in the TSUPE, with 61%, while the LPCE has 24% and

TSUPD 15%. This is because, in these last two, the number of students and groups is lower, in addition to not all responding to the survey.

As customer service is one of its fundamental dimensions for quality, its satisfaction is transcendental, so organizations must understand their needs, meet their requirements and strive to exceed their expectations (Agustín and Domelis, 2009; Cadena, Mejías, Vega and Vásquez, 2015). In the case of universities, where students are the recipients of university efforts, their satisfaction is one of the most important quality indicators. However, it is not an observable fact, it is an approach to the perception that students have about their studies, which reveals how the teaching-learning process is being generated, so it has become a strategic aspect that marks the difference in the current university system. Over time it could be considered as a measure of quality control of this process (Cevallos, 2014; Oliva and Gómez, 2014; Pérez and Pereyra, 2015; Surdez, Sandoval and Lamoyi, 2018).

For this investigation, the instrument was used to assess student satisfaction of Álvarez et al. (2015) because it has a broad bibliographic support, in addition to having reliability analysis, which is why it was considered pertinent. Based on a Likert scale (1 = Very dissatisfied, 5 = Totally satisfied), it qualifies various aspects, such as the curriculum, teaching ability, teaching-evaluation methods, infrastructure, among others.

Here, 35% of the students chose the option “Very satisfied” (4) and 26.3% “Satisfied” (3), which explains the average obtained from 3.5 (table 2). Therefore, students are among satisfied and very satisfied. The foregoing also denotes that they consider a positive quality, so it was used as a cut-off point to assess satisfaction in educational quality, which, it should be noted, is slightly higher than that reported by Álvarez et al. (2015). The indicators that appear most frequently in the average and the high percentage of satisfaction are those related to the training and the ability to teach teachers and the level of self-realization. While those linked to support services are ranked last in all groups.

Regarding the degree with greater satisfaction, TSUPD students obtained an average of 4.13 ± 0.64, which is significant when compared with the other groups ($p < 0.001$), with 81.25% satisfied, being the training and ability to teach students Teachers and level of self-realization indicators with higher scores and percentages. This could be explained because the majority come with the conviction to professionalize themselves, so the thematic

content of the subjects gives them scientific and technological knowledge, which improves their practice in their work.

However, the average of all the indicators in those of LPCE are below the cut-off point (42%, and 3.27 ± 0.74), so they have lower satisfaction. The indicators Study plan (46.05% and 3.34 ± 0.87) and Teaching and evaluation methods (50% and 3.32 ± 0.95) are above that of Support services (34.21% and 2.80 ± 0.93, p <0.02). The latter is the lowest average of all (see table 3 and figure. 2).

One of the causes could be the lack of knowledge on the part of the students of the content of the subjects of the degree. Although both could be considered as operating areas, each represents a diverse scheme of attention. The TSUP is an operational technician with a direct response to the population; while the Civil Protection area is responsible for the integral management of risk in society, for the reduction, mitigation and control of disturbing agents. In addition to the shortage of teachers with experience in the area who wish to teach, due to multiple factors such as the evening schedule, the location of the university and financial compensation, coupled with the fact that until 2012 it did not exist.

As in other areas, the presence of women in the university has increased in the last three decades (Navarro and Casero, 2012), a phenomenon observed in the 1: 1 distribution; Therefore, there is a smaller percentage of men in those of LPCE, with 42.1%, unlike the TSUPD, with 75%, since the majority of active paramedics are men. It is reported that gender is one of the factors that has the greatest influence on the election of the university career, for example, women are more associated with health and social sciences (Martínez, Castro, Zurita and Lucena, 2015). However, there are studies that show that this assumption is empirical because there have been measurement errors, or because they only reflect differences throughout the history of socialization (Rodríguez, Sánchez and Labajos, 2017).

Regarding precisely gender, 58% of men are satisfied with the education they receive, with an average of 3.6 ± 0.76, while the percentage and average in women is lower, without significant differences. It is worth mentioning that there are also works that indicate that women devote more effort and time to study than men, and therefore are more demanding (Martínez et al., 2015).

However, 50.94% (163) of the respondents are dedicated to study; The TSUPE group records this feature with the highest percentage: 62.76% (123). And 24.69% (79) work in prehospital care or related area, with 93.75% (45) the TSUPD, as one of the

requirements to be able to enter this modality is to be working as paramedics in some public or private institution, with a seniority of At least five years.

Following Álvarez et al. (2015), quality is a key element for an organization to be competitive. Students not only enter universities for obtaining a degree, but are influenced by the quality of knowledge and teacher education (Inzunza et al., 2015). Numerous elements have been identified that affect the degree of student satisfaction, which influence academic performance, attrition or the feeling of belonging. Some of them are the following: teachers, career opportunities, facilities, university reputation, among others (Surdez *et al*., 2018).

In the correlation analysis, it was observed that for students it is important self-realization (60.6% and 3.64 ± 0.83), being reflected in the training for the insertion of the labor world (3.66 ± 0.86) with the acquisition of knowledge and skills (3.62 ± 0.92); Therefore, university education is obliged to provide the necessary tools for students to be critical and innovative through the generation of knowledge that allows the sustainable development of the nation (Espinosa, 2016). Another noteworthy aspect is the promotion of values; TSUPD students (4.48 ± 0.80), being active at work, know the implications of a bad practice or inappropriate behavior. The competency-based model that governs the system of technological universities develops professional values, such as professional attitude and ethics, through transversal competencies.

The evaluation of the teacher by the students has been assumed as a direct measure of satisfaction with the university experience, and the quality of it (Moreira and Santos, 2016). This study corroborates that teacher attention (3.73 ± 1.08), belonging here to the enabling environment indicator (63% satisfaction and 3.59 ± 0.9 on average), is a determining factor for satisfaction, as seconded by the APC. In this regard, there are reports that suggest that if students perceive positive relationships with the teaching staff they are more likely to experience greater satisfaction and commitment (Inzunza et al., 2015).

The characteristics of the teachers that students value were expressed in the indicator Training and ability to teach teachers (68% and 3.8 ± 0.86), with the components Teacher Responsibility (3.88 ± 1.00), Teachers promote the participation of teachers student (3.81 ± 1.06) and Teachers orient and support the student (3.75 ± 1.07), which correlate from strong to very strong, as shown by the correlation analysis. However, communication capacity (3.62 ± 1.01) is the component with the lowest average, so it is

considered an area of opportunity detected; together with Teachers are trained and updated (3.75 ± 1.00), which correlates with Teachers know and dominate the subject (3.82 ± 1.02), from strong to very strong.

Although the academic and pedagogical quality of teaching are crucial determinants of student satisfaction, other elements such as infrastructure (59.06%, and 3.59 ± 0.88), administrative services (58.13% and 3.41 ± 1.07) should not be neglected.) and the quality of services (38.13% and 3.04 ± 0.95) (Inzunza et al., 2015). It is necessary to have clean and modern facilities, comfortable furniture and adequate spaces for study; Literature supports a positive relationship between service quality and satisfaction (Alonso Dos Santos, 2016).

The infrastructure of the Paramedic Laboratory was valued with an average of 3.77 ± 1.02, so the students are considered satisfied. This has medical simulators, various mannequins for the practice of cardiopulmonary resuscitation, arms for channeling, electromedical equipment such as defibrillators and monitors; resources that contribute to developing the competencies of a good professional practice. Regarding the indicator Administrative services (3.41 ± 1.07), Admission and registration process (3.58 ± 1.15) correlates from strong to very strong with the attention by the administrative staff (3.36 ± 1.19) of the enabling environment indicator.

It should be noted that support services have 62% dissatisfaction and an average of 3.04 ± 0.95: it is the lowest average of all indicators. It is likely that, due to the remote location of the technological universities, some support services are affected, such as internet access (2.38 ± 1.33), the photocopying service (2.56 ± 1.28), the medical service (2.85 ± 1.32) and the cafeteria (3.11 ± 0.99). Regarding this point, it is worth adding that recently cultural, artistic and recreational activities have been implemented, through theater, photography, chess and sports workshops.

Conclusions

For 10 years, the TSUP has been offered at the UTVT, both in school and depressurized mode, with continuity in the LPCE, the latter with a duration of six years, which contributes to the development of the region.

While studies of satisfaction in academic quality in students are controversial, considering that their opinion may be biased by the result of the moment, they allow higher education institutions to find points of continuous improvement, because, ultimately, they are these, the students, the recipients of the teaching processes.

TSUPD students are the ones who are very satisfied with the education received, because the scientific and technical information they receive complements their daily practice, and improves their work experience. While those of LPCE are only satisfied due to multiple factors, such as ignorance of the content of the degree or the shortage of teachers.

Personal attention by the teacher is essential for quality education, in accordance with the students' perception of the Paramedic and Civil Protection Career Directorate. It is his responsibility, with his educational process, to promote his participation, and give them guidance and support.

In the Study Plan indicator, the majority of the groups expressed their satisfaction regarding the content of the subjects, and it is related to the level of Self-Realization, because it trains them with knowledge and skills for insertion into the labor world, in addition to promote values; Consequently, TSUP students consider the program to be relevant.

The support services are an area of opportunity for the Paramedic and Civil Protection Department, where the medical service, photocopying and internet access have the lowest averages.

This first evaluation exercise allowed to identify the degree of satisfaction of the students of TSUP and LPCE, which is from satisfied to very satisfied, in addition to knowing their opinion regarding what they consider a quality education. For future research it would be important to conduct personal or group interviews in order to investigate the concerns of the students and address their needs, as well as to conduct the questionnaire at least once a year in a routine way to build a culture of continuous improvement.

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